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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/472,958	12/27/1999	HO-SEONG LEE	Q57079	9416

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SUGHRUE MION ZINN MACPEACK & SEAS PLLC
2100 PENNSYLVANIA AVENUE NW
WASHINGTON, DC 200373202

EXAMINER

SOLOMON, GARY L

ART UNIT	PAPER NUMBER
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2615

11

DATE MAILED: 04/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/472,958

Applicant(s)

LEE, HO-SEONG

Examiner

Gary L Solomon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 31, 2004 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 4, and 5-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Hwang (5,666,160).

For claim 1, Hwang discloses a digital zoom apparatus (Figure 6) for forming a zoomed out image (image output") from a plurality of received image signals in accordance with a given magnification ("m": input of 62), the apparatus comprising:

an image signal storage unit which stores a plurality of frame or field image signals (66);

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a motion information detector (Figure 6, Element 61) which detects motion information between first and second image signals of the plurality of frame or field image signals (Column 3, Lines 33-37); and

a record and control unit (Figure 6, Element 63) which zooms out the received frame or field image signals in accordance with a given magnification ("m" in Element 62), receives motion information from said motion information detector ("V(n)"), controls the location in said image signal storage where the zoomed out image signals are to be recorded, and records zoomed out image signals in said image signals storage unit (Column 3, Line 33, Line 59),

wherein the first image signal corresponds to a first image of a first areas and the second image signal corresponds to an image of a second area (Column 3, Line 29 through Column 4, Line 4), and

wherein the plurality of received frame or field images, including the first and second images are zoomed out and combined to form the zoomed out image (Column 3, Line 29 through Column 4, Line 4), which is synthesized according to a degree of overlap between the received images (Column 3, Line 60 through Column 4, Line 5; Note: The recorded images are overlapped due to the applied motion correction. Column 3, Lines 38-42).

For claim 4, Hwang discloses all the previous limitations, wherein said motion information detector (Figure 6, Element 61) compares a previously received image signal with a currently received image signal to detect said motion information (Column 6, Lines 32-34).

For claim 5, Hwang discloses the storage in the image signal storage unit of only those portions of received images needed to form the zoomed out image, whereby storage space is conserved by elimination of redundant information. By using only the portion of images that are

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within the zoom area, the redundant information in the unselected area of each subsequent input image is eliminated (Column 3, Lines 33-37; Column 6, Lines 65-67).

For claim 6, Hwang discloses all the previous limitations, wherein redundant copies of duplicate portions of received images which overlap are not stored in said image signal unit by said record and control unit (Column 4, Lines 40-56).

When the images are added synthesized together the redundant copies are thus eliminated.

For claim 7, Hwang discloses all the previous limitations, wherein said record and control unit receives a new image signal which includes a duplicate portion overlapping with a previously recorded image signal, the record and control unit (Figure 6, Element 63) maintains the duplicate portion from the previously recorded image signal (Column 3, Lines 37-59).

For claim 8, Hwang discloses all the previous limitations, wherein said record and control unit receives a new image signal which includes a duplicate portion overlapping with a previously recorded image signal, the record and control unit (Figure 6, Element 63) replaces the duplicate portion of the previously received image signal with the duplicate portion of the new image signal (Column 3, Lines 50-67).

For claim 9, Hwang discloses all the previous limitations, wherein said record and control unit receives a new image signal which includes a duplicate portion overlapping with a previously recorded image signal, the record and control unit (Figure 6, Element 63) stores an interpolation of the duplicate portion of the previously recorded image signal and the duplicate portion of the new image signal (Column 3, Lines 50-67).

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For claim 10, Hwang discloses all the previous limitations, wherein non-overlapping portions of received image signal, needed to form zoomed out image, are stored in the said image signal unit by said record and control unit (Figure 6, Element 63; Column 3, Lines 55-60).

For claim 11, Hwang discloses all the previous limitations, wherein the zoomed-out image includes a larger area than that of the first image, and includes a larger area than that of the second image (It is inherent when zooming out that the image would include a larger area. In Hwang, when one magnifies, the image would be of a smaller portion of the image. When, the magnification factor is reduced, a larger image would be produced from the previously zoomed in image.).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hwang (US 5,666,160) in view of Hale (US 5,412,421).

For claims 2 and 3, Hwang discloses all the previous limitations. Hwang includes a motion detector, which detects movement. An accelerometer or gyroscope is a motion detector. However, Hwang does not explicitly teach accelerometer or gyroscopic sensor to detect and provide motion information data, even though one of ordinary skill in the art would know that accelerometers and gyroscopes are motion detectors.

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Nevertheless, Hale teaches a motion compensated sensor that contains a motion detector that includes a gyroscope and an accelerometer (Column 3, Lines 15-19). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to configure Hale's motion detector, which includes an accelerometer and gyroscope in Hwang's digital zooming apparatus in order to determine movement of the sensor.

7. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hwang (US 5,666,160) in view of Szeliski (US 6,157,747).

For claim 12, Hwang discloses all the previous limitations, wherein the plurality of received frame or filed images captured by a camera (Column 3, Line 49 through Column 4, Line 6), but lacks teaching wherein the zoomed-out image includes a larger than a respective area within a viewing angle of the camera when capturing images.

Panoramic viewing cameras have been established in the art and are notoriously well known. They take images from different views and merge them together to give the viewer an angle such as they are immersed in the image. They also make the viewing angle larger than that of what the camera can capture.

Szeliski uses a zooming panoramic camera to zoom in and out when partially or fully overlapping images to look at images in the same scene but at different viewing angles and thus discloses wherein the zoomed-out image (Column 16, Lines 55-57) includes a larger than a respective area within a viewing angle of the camera (Figure 3) when capturing images (Abstract; Figure 3).

It would have therefore been obvious to one of ordinary skill in the art at the time of the invention to configure the apparatus of apparatus of combining overlapping images of Szeliski at

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different viewing angles with the apparatus of Hwang in order to give the viewer a more realistic view of the image and also to make the view fell like they are immersed in the image (Figure 3).

Response to Remarks

8. The Hwang reference does in fact teach an image formed of a collage of small area images (Abstract). However, the claims fail to mention the particular example pertaining to a large image exceeding being created exceeding the area limits of what a camera's CCD can capture as an individual image.

In Hwang, the image synthesizer (64) combines images that previously recorded from the image memory (86) with present images to zoom in and out by changing a magnification factor. In order to synthesize images, at least two images would be required. The images are overlapped due to the applied motion correction (Column 2, Line 37 through Column 3, Line 65).

Non-Overlapping portions of the image would be present where no motion correction in the image is needed. The pixels would not need to be adjusted because there would be no difference in between the present image signal and the previously recorded image signal.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary L Solomon whose telephone number is (703)-305-4370. The examiner can normally be reached on Monday - Friday 8:00 AM - 5:00 PM.

10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's primary, Vu Le can be reached on (703)-308-6613.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

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Or faxed to:


(703) 872-9314, (for informal or draft communications, please label
"Proposed" or "Draft")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,
Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be
directed to the customer service number **(703) 306-0377**.

Gary L Solomon

April 19, 2004


VU LE
PRIMARY EXAMINER